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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,593	10/24/2003	Richard L. Sutherland	SAIC0003-CJ-C	7316

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EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/891,593

Applicant(s)

SUTHERLAND ET AL.

Examiner

Martin J. Angebrannt

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 38-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/10/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

The examiner would like to point out that it has been held in the courts that the "applicant has [an] obligation to call the most pertinent prior patent to [the] attention of [the] Patent Office in a proper fashion." [Penn Yan Boats, Inc. V. Sea Lark Boats, Inc., et al. 175 USPQ 260 (DC SFla 1972)]. The examiner would appreciate the applicant identifying why the cited reference is pertinent to the claimed optical recording media including relevant portions of the document cited. The applicant has cited approximately 200 references, some of which appear to be of limited probative value. US patents 4018228, 4930674, 4929240, 4368736 and 4210132 are exemptive of patents cited by the applicant, which seem to be of limited relevance.

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 50-61 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for hologram formation, does not reasonably provide enablement for modulation of the hologram without electrodes or switching means. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

These claims should recite electrodes of switching means using language from the specification as these are essential to the achievement of the two different states.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 43,44,49,55,56 and 61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 43,44 and 49 are dependent upon claim 40, but should be dependent upon claim 42, which first introduces "a surfactant".

Claims 55,56, and 61 are dependent upon claim 50, but should be dependent upon claim 52, which first introduces "a surfactant".

These claims currently lack antecedent basis for the term "the surfactant"

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent,

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 38,39,41,42,45-48,50,51,53,54 and 57-60 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sutherland et al.

*343 (different inventorship).

The example uses the monomer dipentacrythritol hydroxypentacrylate, 17.3 wt% of the liquid crystal E7, 7 wt % of the crosslinking monomer N-vinylpyrrolidone, 1.7 wt % of the coinitiator N-phenyl glycine and 0.1 wt% of the photoinitiator Rose Bengal which is then exposure using a Argon ion laser. (6/35-57) The use of surfactants is disclosed as lowering the switching voltage requirements. and include octanoic acid which may be used in amounts of 5-10%. The use of these as electrically switchable holograms is disclosed. (5/15-49). Figure 3 shows the fringes at an angle to the surfaces of the holographic recording medium. This is reinforced by the teaching that if the apex of the prism is approached at an angle, then the interference patterns will be at an angle to the surfaces of the film (4/27-30).

The examiner holds that the reference anticipates the invention as the specific composition disclosed combined with the fringes shown at an angle in figure 3 and the teachings of column 4/lines 27-30 indicate that a holographic recording using the recording medium disclosed was made with angled fringes or that based upon this disclosure, the claimed invention using the specific composition disclosed combined with the fringes shown at an angle in figure 3 is at "once envisioned by one skilled in the art" (in re Petering, 233 USPQ 275 (CCPA 1962), In re Schaumann, 197 USPQ 5 (CCPA 1978)). The examiner notes that the composition exemplified in column 6 and the benefits ascribed to the composition direct one skilled in the art to that composition and the slanted fringes shown in figure 3 and enabled by the discussion in column 4 lead one to immediately envision the claimed invention. If this is not held to be the case, then the examiner adopts the position that it would have been obvious to one skilled in the art to form holograms with slanted fringes

8. Claims 40-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al. '343.

In addition the basis set forth above, it would have been obvious to use supports which have electrodes thereon in place of the glass slides specifically used in the example to render the final article electrically switchable and to add additives known to be useful in reducing switching voltage, such as octanoic acid in the amounts disclosed to be useful based upon the direction to do so, with a reasonable expectation of gaining these benefits.

9. Claims 38-61 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Domash et al. "Switchable-focus lenses in holographic polymer dispersed liquid crystal", Proc. SPIE Vol. 2689 pp. 188-194 (05/1996), alone or in view of Sutherland et al. Chem. Mater. Vol 5, pages 1533-1538, (1993) and/or Tanaka et al. '452.

Domash et al. "Switchable-focus lenses in holographic polymer dispersed liquid crystal", Proc. SPIE Vol. 2689 pp. 188-194 (05/1996) describe forming an optical hologram of a conventional lens using the PDLC material by focusing light through the lens and together with a plane wave as shown in table 1. (section 3.2). The forming an optical hologram of a fresnel lens using the PDLC material by focusing light through the lens and together with a plane wave as shown in table 1. (section 3.7). The materials used include dipentaerythritol hydroxypentaacrylate, liquid crystal E7, n-vinylpyrrolidone, N-phenyl glycine, Rose Bengal, and 4-8% octanoic acid coated materials of Sutherland et al., Chem. Mater. Vol 5, pages 1533-1538, (1993).

Sutherland et al. 'Bragg Gratings in an acryate polymer consisting of periodic polymer dispersed liquid crystal planes' Chem. Mater. Vol 5, pages 1533-1538, (1993) in the example

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uses the monomer dipentaerythritol hydroxypentacrylate, 10-30 wt% of the nematic liquid crystal E7, 10 wt % of the crosslinking monomer N-vinylpyrrolidone, millimolar amounts of the coinitiator N-phenyl glycine and millimolar amounts of the photoinitiator Rose Bengal which is then exposure using a Argon ion laser. (1534/left column). The grating spacings are 0.54 microns. The clearing of the holograms using heat or electrical fields is disclosed. (1535/left column). The procedure for recording holograms in the medium where the LC is in the photosensitive composition allows fast single step recording with high diffraction efficiencies (page 1533, lower right column to page 1534, upper left column).

Tanaka et al. '452 teaches the use of nematic LC based PDLC material for making holographic articles. See figures 10-15b, 16c, 18-22, 25 and particularly figures 31-33, 39 and 42a-42b, multiplexed holograms in figures 45-48. The use of the LC mixture E-7 is disclosed with respect to figure 10 which uses an ITO film to facilitate switching (15/20). Tanaka et al. '452 shows in figures 10-15b and 18-22, that the fringes of holographic lenses are at an angle to the surfaces of the hologram.

The examiner holds that inherently at least some of the fringes are at an angle to the surfaces of the hologram in the holographic PDLC lenses of Domash et al. "Switchable-focus lenses in holographic polymer dispersed liquid crystal", Proc. SPIE Vol. 2689 pp. 188-194 (05/1996) and cites Tanaka et al. '452 for figures 10-15b and 18-22 which supports the position of inherency. Further, the examiner holds that Domash et al. "Switchable-focus lenses in holographic polymer dispersed liquid crystal", Proc. SPIE Vol. 2689 pp. 188-194 (05/1996) used the same composition as disclosed in Sutherland et al. Chem. Mater. Vol 5, pages 1533-1538,

(1993) with 4-8% octanoic acid based upon the direction to that material used in that reference and the specific recitation of the same ingredients.

10. Claims 38,39,41,42,45-48,50,51,53,54 and 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al. Chem. Mater. Vol 5, pages 1533-1538, (1993) and Tanaka et al. '452.

It would have been obvious to one skilled in the art to modify the process of Sutherland et al. Chem. Mater. Vol 5, pages 1533-1538, (1993) by using the material to record other useful holographic articles, such as the slant fringe holograms shown in figures 42a-42b or the angularly multiplexed holograms disclosed by Tanaka et al. '452 in figures 45-48 with a reasonable expectation of forming useful PDLC holographic articles and in the case of the angularly multiplexed holograms increasing the information content of the holograms beyond that of a single holographic image. Additionally, it would have been obvious to one skilled in the art to modify the teachings of Tanaka et al. '452 by forming the PDLC holograms shown in figures figures 42a-42b or the angularly multiplexed holograms of figures 45-48 using the fast (highly sensitive) PDLC recording material taught by Sutherland et al. Chem. Mater. Vol 5, pages 1533-1538, (1993) with a reasonable expectation of forming useful PDLC holographic articles

11. Claims 38,39,41,42,45-48,50,51,53,54 and 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al. Appl. Phys. Lett., Vol 64(9) pp 1074-1076 (2/1994) and Tanaka et al. '452.

Sutherland et al., 'Electrically switchable volume gratings in polymer-dispersed liquid crystals', Appl. Phys. Lett., Vol 64(9) pp 1074-1076 (2/1994) in the example uses the monomer

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dipentaerythritol hydroxypentacrylate, 10-40 wt% of the liquid crystal E7, the crosslinking monomer N-vinylpyrrolidone, the coinitiator N-phenyl glycine and the photoinitiator Rose Bengal which is then exposure using a Argon ion laser when coated between ITO coated slides. (1074/right column). The material is disclosed as having a fast curing speed, which results in small LC droplets (page 1074, right column). The process is also single step and allows the formation of any switchable grating (page 1074. left column)

It would have been obvious to one skilled in the art to modify the process of Sutherland et al. Appl. Phys. Lett., Vol 64(9) pp 1074-1076 (2/1994) by using the material to record other useful holographic articles, such as the slant fringe holograms shown in figures 42a-42b or the angularly multiplexed holograms disclosed by Tanaka et al. '452 in figures 45-48 with a reasonable expectation of forming useful PDLC holographic articles and in the case of the angularly multiplexed holograms increasing the information content of the holograms beyond that of a single holographic image. Additionally, it would have been obvious to one skilled in the art to modify the teachings of Tanaka et al. '452 by forming the PDLC holograms shown in figures figures 42a-42b or the angularly multiplexed holograms of figures 45-48 using the fast (highly sensitive) PDLC recording material taught by Sutherland et al. Appl. Phys. Lett., Vol 64(9) pp 1074-1076 (2/1994) with a reasonable expectation of forming useful PDLC holographic articles

12. Claims 38-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al., 'Development of photopolymer-liquid crystal composite materials for dynamic hologram applications', SPIE vol. 2152, pp. 303-313 (1994) and Tanaka et al. '452.

Sutherland et al. SPIE vol. 2152, pp. 303-313 teaches 10-40 wt % of liquid crystal E7, 10 wt% n-vinylpyrrolidone, millimolar ranges of N-phenyl glycine, 10^{-4} M Rose Bengal and the balance being dipentaerythritol hydroxypentaacrylate and 8% ocatnoic acid as a surfactant coated between two ITO slides and gratings were recorded in the resulting compositions.. (section 2 materials) Examples include loading of the LC E7 at 16, 16.5, 21,24,29,34 and 36 wt% are presented in the reference. The use of these to form various switchable holographic articles including interconnects, angular multiplexers, and multifocal lenses is disclosed. (page 303). The materials are inexpensive and offers commercial potential. (page 311).

It would have been obvious to one skilled in the art to modify the process of Sutherland et al. SPIE vol. 2152, pp. 303-313 by using the material to record other useful holographic articles, such as the slant fringe holograms shown in figures 42a-42b or the angularly multiplexed holograms disclosed by Tanaka et al. '452 in figures 45-48 with a reasonable expectation of forming useful PDLC holographic articles and in the case of the angularly multiplexed holograms increasing the information content of the holograms beyond that of a single holographic image. Additionally, it would have been obvious to one skilled in the art to modify the teachings of Tanaka et al. '452 by forming the PDLC holograms shown in figures figures 42a-42b or the angularly multiplexed holograms of figures 45-48 using the fast (highly sensitive) PDLC recording material taught by Sutherland et al. SPIE vol. 2152, pp. 303-313 to form articles specifically considered by Sutherland et al. SPIE vol. 2152, pp. 303-313 with a reasonable expectation of forming useful PDLC holographic articles

13. Claims 38-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al., 'Switchable holograms in new photopolymer-liquid crystal composite materials', SPIE vol. 2404, pp. 132-143 (2/1995) and Tanaka et al. '452.

Sutherland et al. SPIE vol. 2404, pp. 132-143 teaches dipentaerythritol hydroxypentaacrylate, liquid crystal E7, n-vinylpyrrolidone, N-phenyl glycine, Rose Bengal, and 4-8% octanoic acid coated between two ITO slides and gratings were recorded in the resulting compositions.. (section 2 experiment) Examples include loading of the LC E7 at 27% and the surfactant at 4% (page 137,138) are presented in the reference. The use of these to form various switchable holographic articles including interconnects, angular multiplexers, and multifocal lenses is disclosed. (page 132). The materials are extremely sensitive to light (fast, page 133) and high switching speeds are achieved. (page 132)

It would have been obvious to one skilled in the art to modify the process of Sutherland et al. SPIE vol. 2404, pp. 132-143 by using the material to record other useful holographic articles, such as the slant fringe holograms shown in figures 42a-42b or the angularly multiplexed holograms disclosed by Tanaka et al. '452 in figures 45-48 with a reasonable expectation of forming useful PDLC holographic articles and in the case of the angularly multiplexed holograms increasing the information content of the holograms beyond that of a single holographic image. Additionally, it would have been obvious to one skilled in the art to modify the teachings of Tanaka et al. '452 by forming the PDLC holograms shown in figures 42a-42b or the angularly multiplexed holograms of figures 45-48 using the fast (highly sensitive) PDLC recording material taught by Sutherland et al. SPIE vol. 2404, pp. 132-143 to

form articles specifically considered by Sutherland et al. SPIE vol. 2404, pp. 132-143 with a reasonable expectation of forming useful PDLC holographic articles

14. Claims 38-61 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of U.S. Patent No. 5,942,157. Although the conflicting claims are not identical, they are not patentably distinct from each other because they cover/seek coverage for the same subject matter and the issuance of the instant claims would represent a timewise extension of patent coverage.

The claims of the instant application embraces reflection holograms, as evidenced by 11b which is a slanted fringe reflection hologram. The claims of U.S. Patent No. 5,942,157 specifically describe reflection holograms, including the disclosed species of slanted fringe reflection holograms shown in figure 11b of that reference. The examiner holds that overlap of the claimed subject matter is shown to exist and that any issuance of the instant claims would unlawfully represent a timewise extension of patent coverage of at least a portion of the subject matter embraced by 1-28 of U.S. Patent No. 5,942,157.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

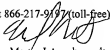
Domash et al., 'Programmable beamlet generator, dynamic lens, and optical memory using electrically switched holographic devices', Proc SPIE Vol. 2026c, pp. 642-652 (11/1993) teaches PDLC using the polaroid materials and infusing the LC material.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J. Angebranndt
Primary Examiner
Art Unit 1756

05/28/2004